



From this is 'The Xerox' User

# ZXir QLibe Alibe!

The Times/Sinclair North American User Groups  
Newsletter

Volume 3 Number 4

Winter 1993

## T/SNUG Chairmen

Here is the list of 1993

T/SNUG Chairmen and how to  
contact them. We wish to support  
the following 2000+ ZX4000/  
TS-1000, 1000, 1000/2000/TS-  
2000/TS-2000 and QL. If you  
have any questions about any of  
these five machines, contact the  
Chairmen.

### Chairman

Don Lambert (TSNUG)  
Chief Moderator  
219 935-1875

### Vice-Chairman

D. G. Smith  
Type A, RLO Library  
814 525-6886

### Dave Bennett (LATE)

2-48  
717 774-7531

### Ed Snow

QL & ZX401 Tape  
407 380-5124

### Red Cowen (CCATS)

RMG Enterprises  
502 415-7484

### Red Humphreys (VSUG)

TS-2000  
604 582-2819

### Bob Swager (CCATUG)

BBB/LandCom  
708 837-7977

### Treasurer

Abel Kahala (CATUG)  
Cash Treas./Newsletter  
708 585-4337

## MEMORY MAP

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Winter 93

# T/SNUG Information

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## *ZXir QLive Alive!* is the

newsletter of T/SNUG, the Times/Spectator North American User Groups, providing news and software support to the TS community at at least four newsletters per year, mailed on January, April, August, and October.

It is our goal to build and maintain a Public Domain software library and develop a list of available software for all TS computers showing the source.

**T/SNUG** wishes to have one chairman from every TS user group who will take charge of sending us their group's newsletter contents and other correspondence for inclusion in the ZX(A) Newsletter.

We encourage your group to copy this newsletter and distribute it at regular meetings to all your members. If you cannot copy this newsletter, perhaps we can provide a disk with the articles on it.

You can keep T/SNUG alive for an annual contribution of \$10 made payable to Abed Kahale. Send check to:-

ABED KAHALE (LarkKen Library)  
335 W NEWPORT RD  
HOFFMAN ESTATES IL 60195-3106  
Phone:- 708-445-4337  
Back copies are available for \$04 each postpaid.

This Newsletter is mailed free to all vendors listed in the "Blue Roasters" page.

And to the following Users Groups/Newsletters:-

CAPITAL DISTRICT	GEX
CATS	SEASUG
CCATS	SMUG
DTP	TSS
FUD	TTSLC
GCSUG	VISTA
HTUG	VSUG
LST	ZX-81
NEBSUG	

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## *ZXir QLive Alive!* *Articles Contributions*

By BBS - We now have a 24 hour 300-3400 BAUD BBS. We encourage you to exchange mail and contribute to the download section.

Use extension 007 for articles, ADS for ads and NWS for news. Have fun.

Call the BBS at 708 630-5556 and register. On your next call your security level will be increased to 3 for most of the privileges.

For help, contact the SYBOP by leaving a message, mail or phone:-

BOB SWOGER (Chicago Area Times Users Group)  
613 PARKSIDE CIR  
STREAMWOOD IL 60067-1647  
H 708 837-7957 W 708 576-8068

By tape or disk send your inputs to:-

DONALD LAMBERT  
ZXir QLive Alive! Newsletter  
1301 KIBLINGER PL  
AUBURN IN 46706-3010  
Phone 219 923-1372

Or by hardcopy mail to - Abed Kahale (address above)

For software libraries, write or call the following Vice-Chairmen. When writing, please enclose a LSASE.

DAVE BENNETT (ZIR)  
329 WALTON ST BEAR  
LEMOYNE PA 17045

ROD GOWEN (CCATS/RMG)  
14784 QUAIL GROVE CIR  
OREGON CITY OR 97045

ROD HUMPHREYS (VSUG/2054)  
10984 COLLINS PL  
DELTA B C V4C 7E6 CANADA

D G SMITH (2068 TAPE Library & JLC)  
R 415 STONE ST  
JOHNSTOWN PA 15906

ED SNOW (ZX-81 TAPE & QL)  
2136 CHURCHILL DOWNS CIR  
ORLANDO FL 32825

# Input/Output

by Abed Khabale

## Help!

"I am a retired TS2068 user who continues to use the 2068 computer


About 10 years ago I put together a program that produces fishing and hunting times as a hobby. I had a 2068 user out east (from Augsburg?) write the technical code to calculate the various times, i.e., sunrise, sunset, etc. Here, who is an astronomer, can't be located. Unfortunately, he made use of Function Calls in his calculations." ... "My problem is that the 2068 takes about 4 hours to perform the calculations necessary for me to produce one set of 52 weeks of tables for one customer. Now this is O.K. when I go fishing ... I just load it up and start it running." ... "Is there anyone who could help? I would be willing to pay, of course."

Jack H. Payne

Solunar Services, Inc.

1107 N. Morgan St

Rushville IN 46173

 **Dick Wagner, CCATS** and Secretary of the PLOTTER came to the rescue

William B. Horner III called (Don Lambert) with a question about how to connect up a Radio Shack High Resolution Color Monitor (CM-11) to his Sinclair QL with TK2, Camosa and dual disk drives. He sent me a spec sheet on the CM-11 and it is elsewhere in this newsletter. Can anybody out there help him out? He has connected it up one way (not totally) and the screen rolls, another way and the screen turns drastically to the left. Don B. WILLIAM B. HORNER III  
4311 BUCKINGHAM  
DETROIT MI 48224

*I hate to be the one to bring you bad tidings. A non-interlaced monitor is not compatible with Sinclair Computers. However, all is not lost: see the HARDWARE PROJECT by Bob Glaser of LST elsewhere in this issue.*

## LACE!

Televisions (NTSC) and interlaced monitors sequentially scan 262.5 odd then even lines per each frame (frame = 1/30 of a second) while non-interlaced monitors scan the whole 512 lines per frame to deliver flicker free picture. The fairly new "high resolution non-interlaced monitors" deliver state-of-the-art picture quality, unfortunately we can not benefit from them.

The 2068 can deliver a composite color picture to the VIDEO input on a TV or through the VCR video input to a TV. The QL (see Maze Publishers) is capable of delivering excellent black and white picture to the same. Of course RGB monitors are best suited to our computers if they can be found.

## Keep'em Coming

David E. Lazzov Systems Oriented Languages Corp. of Tucson AZ - "Thank you for continuing your fine support of Tamsco/Sinclair products. While my first such machine was a TS1000, the extra color, memory, and expandability of the 2068 have dominated my interests in personal computing to such an extent that the (open) 2068 system is my main, and the (closed) Apple II C+ is relegated to support duties." ... "We need more interesting articles and I for one, intend to submit more such material. It has been a long time coming, for me, but we now have a handle on Bill Jones' fine word processor and disk data base manager and we mean to use it." ... "Wow!!!! Where did you get all those disks? I want them all, and now, not later."

*We thank you for your support. The Public Domain Library disks were received by Tim*

Francine Sklar of Loch Sheldrake NY:- "I let my membership lapse, could I get the back issue of 1993?" "I have changed my address" "Although I still use the TS2068, the Z88 is the machine I use most frequently. I would be most interested to read articles on ZBASE.

*How about it Z88 users?*

Greg Simmons of Peoria IL:- "I would like to join the T/SNUG. I am interested in the TS2068 computer." "I have always been a fan of the Sinclair line of computers." "I lost track of the Sinclair users for a while. I found them again when I saw an ad in the Computer Shopper for UPDATE! Magazine. I found a wealth of information on the Sinclair computers and people that still sell and support the computers." "I hope to restock on the Sinclair line of computers soon. I have read a little of a disk drive for the 2068 called LarKen Disk Interface. Can you help and explain about the Disk Interface and

*where can I obtain a LarKen?*

*A response was mailed including suggestion to check with RMS, Ed Grey and John Oliver.*

Quentin Kent of Allentown PA:- Called to find out whether Times/Sinclair is still alive! He requested information about upgrading his 2068 to disk drive and all of the ZQ/A available series.

*Where can I obtain a disk interface?*

*A response was mailed. The LarKen Disk Operating System is the most popular that provides interface to 4 disk drives, ZSDR2000, ZSDR4000, and QUAZ8000, a RAMDISK too [ZS6K]. Larry Karry is no longer supplying the boards but there maybe*

*some around like at RMS Enterprises, Mechanical Affinity and Ed Grey. The John Oliver Co. interface is still available (see ad in this issue, reprinted from the Toronto Sun-Link). The two interfaces are not compatible. Also check AERGO.*

**"Doodlers - Do you have LarKen?"**

**Please drop me a line and let us all know. Ads are for free."**

*Our thanks go to Bill Russell for providing quit a few Times/Sinclair users with reference to LarKen Disk Interface!*

Gillian Parrish of Boggs OK:- "Dear Don," "Got the last issue of ZQ/A — still doing a great job. And I again got the guilty feeling I wasn't doing anything to help the cause." "A while back, I got directly from Hysto-Buck a 240 BAUD modem/serial interface. The device comes with terminal software and RS-232 printer driver software. The modem certainly works; I used it to contact a local BB5 which allow users to set the number of columns they wish to receive (quite a benefit when you have only a 32-column screen!). First (and to be fair, this is clearly stated in the ad), the device does not support x-modem or similar program transfers, although it will support limited transfer between two ZC/TS machines. I am not clear if this is a limitation of the modem, the supplied terminal software, and/or a relatively easy hardware hack, that would allow x-modem transfer on these modems? Secondly, although some sources indicate the serial interface on the device can be used to connect to a faster modem, nothing in the supplied RS-232 software appears to be relevant to anything but a serial printer. Does anyone have other terminal software designed for such an RS-232 interface and a faster (say 2400 BAUD) modem?"

*Another question, you mentioned in the Newsletter getting a 16K Minipak expander*

with DIP switches. Can you tell me the DIP switch settings, to use it with another 16K expander for 32K total?" "A few weeks ago in a thrift store, I ran into a fully functional 2064 and 2040 going for about \$8 total. I'd like to stabilize onto a few more of those deals!"

"Do you know of any source for those 4" wide aluminum coated rolls of electrostatic paper, used by the ZX Printer?"

*See the MEMOTECH instructions next page. Bob Swager, who owns a MEMOTECH modern, is trying to find answers to your questions.*

*The only software available for the 2068 that provides more than the 3003 BASIC is Larkien MacCom that requires a serial port to go online at 1200.*

*For the ZX-Printer, try the thermal paper which is still available from our dealers, I believe. Otherwise, Radio Shack carries slightly narrower paper rolls.*

## Errata

Page 17 of the Fall 93 issue, Line 7 of the program should read:-

7 RANDOMIZE USR 100:POKE  
8214,16100

## Treasury Notes Supporting T/SNUG

		Date
Paul	Anderson	5/93
Ronald	Baty	6/93
Dave	Bernard	6/93
Don	Berry	11/92
Alvin	Bluman	6/93
Daniel	Chadlin	7/93
Len	Cottrell	6/93
Janis	Cotto-Figueroa	11/92
Robert	Cumant	8/93
Frank	Davis	ISTUG 9/92
Daniel	Elliott Computer Classes	5/93
Ruth	Fogley	5/93
Ferdinand	Guthrie	5/93

Robert	Hartung	4/93
Fred	Hann	7/93
Fredrick	Hill	4/93
William	Horner	12/92
Gleason	Hufnieder	7/93
Rod	Humphreys V8UG	Charter
Warren	Jackson	4/93
Edward	Jordan	6/93
Jon	Kacner GCTUG	8/93
Joan	Keady	4/93
Quentin	Kent	12/92
Wayne	Kanawt	2/93
Jeffrey	Kalkmann	7/93
Donald	Lambert TMSUG 2068	4/93
Dave	Lansov	12/92
David	Leach Byte-Buck	9/92
Robert	Madaris	5/93
Li Col. Walter	Malin	3/93
Lafe	McCorliffe	9/93
Harry	Miller Jr	5/93
Frank	Mills CATUG	5/93
Gregory	Nordmark	5/93
Gillian	Parrish	12/92
Jack	Payne	10/93
Hugh	Polley	5/93
Hugh	Scriven	11/92
Greg	Simmons	11/93
Lois	Simon	6/93
Frances	Sklar	12/92
Edward	Snow	5/93
Dane	Stegman	8/93
Mike	Stephens	7/93
Alexander	Sweetser	7/93
Paul	Zachew	12/92
Wesley	Zapotochina	6/93

## ☺ Welcome, New Members

As of December 31, 1993  
we have a balance of \$388.56  
*Abel Rahale Treasurer*  
*The Times/Sinclair*  
*North American User Groups*

# MEMOTECH

# MEMOPAK 64K

A few of our readers requested this information.

There are two memory locations which you change in order to tell the computer the upper limit of your memory (or RAMTOP). These are 16389 and 16388.

To set top of RAM at 64K, type the following:

**POKE 16388,125** (this is not usually needed)

**POKE 16389,125** (this is usually set at 128 for a 32K limit)

**NEW** (the memory is now closed to start afresh, and will now be organized to the new limit)

To check the current top-of-RAM, type **PRINT FREE 16389** and the value 125 should appear in the top left-hand corner of the screen. For a quick check that the memory is now at your finger-tips you can now try the following little programs:

```
10 DIM A$(90,500)
   or
10 DIM A$(9000)
   or
10 POKE 65000,128
30 PRINT FREE 65000
```

These programs reach the top end of memory & remember numbers & take up five bytes. (Tip: if you want to store more numbers and they are integers which don't exceed 125, then why not use the CODE and CHR\$ functions to store values as single byte characters?)

**How can I test that all my variable locations are good?**

First, set the top of RAM back to 32K (either **POKE 16389, 128** or just power up again)

Type in this program which will test away (at a) the 32-64K area, in BASIC mode

```
10 PAUSE
20 FOR I = 32768 TO 65535
30 POKE I,125
40 LET A = FREE I
50 POKE I,0
60 LET B = FREE I
70 IF A<=125 OR B<=0 THEN
   GOTO 130
80 NEXT I
110 PRINT "END OF RAM TEST"
120 STOP
130 SLOW
140 PRINT "ERROR AT ",I
150 STOP
160 PAUSE
170 RETURN
```

You can find how far your program has got by doing a **BREAK**. Remember by using **CONT** the program will print an error message if a bad location is found, and halt. By keying **CONT**, the program will continue its testing. If it reaches "END OF RAM TEST" without having shown an error, you're now ready to start that BIG program

**What is where?**

First of all, our push-down contains a full 64K RAM (and this can be used by other 32K processors, in principle). But the Z80 can only address 64K locations altogether, and the first 32K are already dedicated to its own ROM. So although we've got 64K RAM, and the Z80 can address 64K locations, the MEMOPAK cannot add on more than 32K to the Z80 ROM. This brings the Z80 + MEMOPAK configuration to 64K total. The original 1 K of RAM of the Z80 (located at 16K + ) is disabled and its functions will take place in the MEMOPAK 64K RAM. Confused? There is a diagram on the inside cover to sort it out. The main thing to remember is that the top 48K are automatically used by the Z80 BASIC.

As programs are entered into the system the elements are added into the instruction file and the array file. The instruction file, the display file (holding screen data) and the array file fit neatly into each other in that order at the bottom end of memory. Gradually, as the instruction file increases, the other files are pushed up through memory. Remember, the original 1 K of RAM in the Z80 (located at 16K+) has been disabled and all its functions take place in the MEMOPAK.

This pushing goes on until either the array file reaches the top of the memory or until the display file begins to straddle the 32K mark (by going above 32767)

**Does this mean if I've got 32K or more of RAM, I still can't have more than 125K or so of instructions?**

No. Many people think you are restricted but there is a neat trick which you can force your display file to leap the 32K mark in one bound by getting in a large, dummy instruction. The important thing is to make sure that the display file never straddles the 32K mark. Here is how

a) On input, check from time to time the value in the VARS system variable, so that has just above the end of the display file

```
PRINT FREE 16401 * 126 + FREE 16400
```

b) When the value of VARS approaches 32768, stuff a huge line into the program, like **LET ZERO = 0 + 0 + 0 + 0** etc with about 100 exponents of (+8). This will push the display file entirely above 32768

c) Check the system variable D-FILE to make sure the display file now begins above 32768

```
PRINT FREE 16397 * 126 + FREE 16396
```

If it is, then you can carry on programming

**What about the mysterious 8-16K area?**

On the Z80 this area does not exist. We have supplied it, and you can now reach it directly in your BASIC program, using **FREE** and **POKE**, or with machine code. The rest of

thing you will use it for will depend on how expert you are, but we list support:

- Storing data and machine code sub-routines
- Passing them from one program to another
- Memory-mapping buffer areas for add-ons

For Section Z80001 users, the simplest thing is to set switches 2 and 3 ON and 1 and 4 OFF (MODE 0). This gives the largest possible area. This is how the pack boxes us, and normally there will be no need to change the settings. The other settings are intended to accommodate the needs of special add-ons being developed.

#### MODE SWITCH

	1	2	3	4
A	ON	OFF	OFF	OFF
B*	OFF	ON	OFF	OFF
C*	OFF	OFF	ON	OFF
D*	OFF	OFF	OFF	ON
E*	OFF	ON	ON	OFF

This mode is not compatible with the Z80041, but offers a full 64K RAM to a Z80 that is designed to address it.

B\* OFF ON OFF OFF  
Memory is available in the 13-1 6K area.

C\* OFF OFF ON OFF  
Memory is available in the 8-1 3K area.

D\* OFF OFF OFF ON  
No memory is available in the 8-1 6K area.

E\* OFF ON ON OFF  
Memory is available in the 8-1 6K area.

\* In these cases, 48K for normal BASIC work is still available. Memory made available in the 8-16K area can be used with PEEK and POKE, or for machine code. For Z801 users, switching between modes B, C, D and E is possible, as long as at least one and no more than two switches are ON at the same time. Never have more than two switches ON at a time, as this can lead to overloading. Remember ON is UP!

#### Here you say tips for running a full Z801 system?

Yes. These may or may not help in your situation. When connected to MEMOPAK 64K, and printer, make sure that LOADING takes place with cassette recorder volume set at seven eighths. If possible, make sure that your cassette recorder and Z801 are plugged into different main sockets. With some cassette recorders, you shouldn't have the LOAD (LAD) and SAVE (MKE) connectors plugged in at the same time. LOADING is more likely to be successful if you quote the file name, rather than null (" "). Clean your connectors regularly. Don't use the first twenty seconds of a cassette tape, as that is where a lot of LOADING bugs live.

#### Can I run programs written for a 16K pack on the Memopak 64K?

Yes, they should run straight away, but change a little firstly if you want to re-load your arrays to use the larger memory and you have been SAVING your data. Secondly,

you have to re-order all data after you have re-dimensionalised, to be sure that the right data is going to be accessed. What we suggest is:

- LOAD the original program
  - Edit in a special routine which will list and label the contents of all variables on the printer
  - Run this routine. You now have a hard copy of your data.
  - Re-set your dimensions. Also enter a routine to allow you to re-copy all your old values plus any new ones
  - Run your program and enter the values
- One more thing, to use the memory fully it is much better to use a multi-dimensional string array rather than a simple string, since the Z801 limits single string sizes to a maximum length of 16K, and also duplicates it unnecessarily.

#### A couple of program examples

BASIC strings are stored in the instruction area of RAM (0-5-32K). The reason that when you set a literal, say, LIST AS="CAT" the word CAT is actually duplicated, once as a literal as part of the instruction, and once in the variable area AS. It would be more economical if we could set up an initialization routine which would store all literals once only in the variable area. This simple loop would let you input up to 10 strings of 30 characters each.

```
10 DIM AS(10,30)
20 INPUT I
30 IF I = 0 THEN GOTO 70
40 INPUT SS
50 LIST AS(I) = SS
60 GO TO 20
70 INPUT I
80 IF I = 0 THEN GOTO 110
90 PRINT AS(I)
100 GOTO 70
110 REM AUTOMATIC SELF SAVE
120 SAVE "SELF"
130 GOTO 20
140 STOP
```

#### Shutdowns

Lines 20-60 Store strings

Lines 70-100 Display strings

Lines 110-140 Save program with string arrays.

Now look carefully at the instructions from line 110. With increased array capacity in the memory you will probably want to store your data more permanently. The Z801 system does not (at least as yet) support disc-standing files but it is possible to save your arrays (and then constants) along with your programs. However, it is important that when you next load the program, it does not carry out a RUN but a GOTO instead, otherwise RUN will automatically clear the arrays. This program will SAVE itself automatically (line 130). When you next LOAD it will pick up straight away at line 130 the line after the SAVE, and branch back to the line quoted there (in this case 20). In this way, the RUN instruction is avoided and the variables are not cleared. But make sure you don't branch back to a point where you re-dimensionalise the array you're trying to save!

Good luck from all at MEMOTECH!

# TS-2068 Talks to a PC by Modem

by *Bob Shabale*

**I**t has been a challenge to have a 2068 communicate directly via modem with a PC modem to transfer text files. The procedure was to upload files to a BBS by one computer and then download with the other, until Bob Swager spent an evening with me to tackle this problem.

To communicate, modems have to have a line that has a tone "carrier" and provides a ring "signal". Connecting two modems together from two computers eliminates the carrier and the signal and the modems will not turn on. It has been done with the two modems connected to the same phone line that hold up calling or receiving phone calls for the duration, at 18 text characters per second which is what I got with the 2068 modem.

With a Hayes compatible PC modem, here is how:

1. Connect the two modem lines that normally go to the telephone line together using a two-line plug without any connections to the telephone line.
2. Turn on both modems and load the modems software. MTERM II (Loader V) or MacCom Xmodem for the 2068. Load buffer etc. I used MacCom.
3. Set both computers to terminal mode and the TS-2068 to ASCII (toggle on= none). All other parameters have to match the PC modem's of course or vice versa.

The following has to be done rapidly before the PC abandons the connection.

4. On the PC modem, ENTER ATA (which is Hayes command that forces the PC modem to answer the phone without the

benefit of a ring or a tone). The PC modem emanates a long signal and recognizes the signal from the other modem and connects.

5. Set the PC in RECEIVE mode, Xmodem 300 BAUD and enter the file name.
6. From the TS-2068 select SEND (transmit) file "name.Com" and ENTER.
7. The PC acknowledges and receives the file.
8. Exit SEND to TERMINAL mode and ENTER Ctl Z (SHIFT-7 Z) to tell the PC "end-of-file".

I asked Don to send his input in MSCRIPT on disk, it worked as you can see the results in the "From the Chairman's DISK". Don, please No (%%%%) line, the PC goes crazy with these placeholders.

I mailed a brief version of the above to Electronics Now

Magazine after reading K. G. Pratt letter.

## Electronics Now January 1994 LETTERS Page 17

"...I wanted to transfer several megabytes from the files of my 1983 model Times/Timeser TS2068 computer to an IBM-compatible 286 PC with modem. The TS2068 has 64K of memory, etc. ... The TS2068 uses a non-ASCII code and cannot be directly connected to a PC.

However, the hardware and software associated with the modems allow the transmission of ASCII files. Therefore, the two computers can be connected by phone line. I test up the person's phone line. I had transferred some sensitive material by printing them out from the 2068 and later reading them by an optical character reader (OCR scanner) into the PC.

K. G. Pratt  
Newport News, VA





## QL To IBM RGB Monitor Connections

In the past few weeks I have had three requests for information on how to hook-up an IBM CGA or RGB monitor to a QL. The following information will allow anyone with soldering experience to make an appropriate cable between the QL and an RGB monitor.

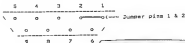
The only problem you may encounter is with the horizontal sync inversion from a negative going sync signal from the QL to a positive going horizontal signal required for most, if not all, American CGA/RGB monitors.

In the following diagram, I use a 74LS09 TTL IC (Quad 2-input positive-rand gate), of which we will use pins 1 and 2, tied together to form an inverter input. The signal from the QL, which is negative, enters the input of the inverter, pins 1 & 2. The sync signal is now inverted within the IC and a positive horizontal sync signal is available at pin 3 which is connected to the horizontal pin on the monitor connector.

If you happen to have a 74LS04 hex inverter IC, it also can be used - just use pin 1 as the horizontal input from the QL and pin 2 will be the inverted sync signal output connected to the monitor connector.

All parts for this project can be purchased at any Radio Shack store. In addition to purchasing the two connectors and IC, you will need a 9 pin "D" connector hood, which if you are careful, can house the IC - just carefully slide all unused pins on the IC and bend pins 1, 2, 3, 5, 6 & 14 in towards the center of the IC. Solder the wires with wireless solder and install the IC upside down (wires facing up) and the two piece connector hood will house it, allowing a clean appearing installation. You will also need a length of cable determined by your requirement. The cable need only be 7 conductors, or if you wish, use 7 - strand lengths of multi-stranded wire to form your cable.

### Male 9 Pin "D" plug (solder pin side)



### Connections to the male 9 pin "D" connector

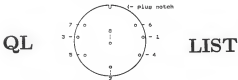
#### PIN #'s

- 1 Ground (common)
- 2 Ground (common)
- 3 Red (RGB signal)
- 4 Green (RGB signal)
- 5 Blue (RGB signal)
- 6 H/C (no connection)
- 7 H/C (no connection)
- 8 Horizontal Sync (negative signal - must be inverted)
- 9 Vertical Sync (most monitors do not require Neg. sync)



Use pin #7, IC-1 as common	0 7 0	8	IC-1 will only have
Ground points for both	0 4 0	9	8 pins used, #'s 1, 2,
cable connectors -	0 1 0	10	3, 7, and 14.
(7 pin "D" pin # 1 & 2)	0 5 0	11	
(8 pin "Din pin # 2).	0 8 0	12	
	0 9 0	13	
Horiz Sync out to 9 pin-3			
"D" connector, pin #8,	1 0 0	14 (= +5 volts from CL connector	[Pin #1].
Horiz Sync input from -12			
CL connector (pin #4)			
[Pins 1 & 2 are (used			
together to form an			
inverted signal input).			

74LS00 TTL IC wired as an inverter - IC-1  
Bottom side up (pins up)



# Pin Din connector(solder pin side)

Connections to the male Din 8 pin connector

Pin #'s

- 1 + 5 volts DC
- 2 Ground (common)
- 3 Composite signal (not used for RGB)
- 4 Horizontal Sync (negative sync - must be inverted)
- 5 Vertical Sync (Most monitors do not require sep. sync)
- 6 Green (RGB signal)
- 7 Red (RGB signal)
- 8 Blue (RGB signal)

Cable Connector hookup

Pin #1, 8 pin Din connector to pin #14, IC-1 (+ 5 Volts DC)

Pin #2, 8 pin Din connector to pin #7, IC-1 (Common Ground)

Pin #3, 8 pin Din connector to 801 USB00

Pin #4, 8 pin Din connector to pin #'s 1 & 2, IC-1 (Horizontal sync input)

Pin #3, 9 pin DIN connector to pin #7, 7 pin 'D' connector (Vertical sync)  
 Pin #4, 8 pin DIN connector to pin #4, 7 pin 'D' connector (Green RGB signal)  
 Pin #7, 9 pin DIN connector to pin #3, 7 pin 'D' connector (Red RGB signal)  
 Pin #8, 8 pin DIN connector to pin #5, 7 pin 'D' connector (Blue RGB signal)

-----

Pin #1 and #2, 7 pin 'D' connector to pin #7, IC-1 (Common Ground)  
 Pin #3, 7 pin 'D' connector to pin #7, 8 pin DIN connector (Red RGB signal)  
 Pin #4, 7 pin 'D' connector to pin #4, 8 pin DIN connector (Green RGB signal)  
 Pin #5, 7 pin 'D' connector to pin #8, 8 pin DIN connector (Blue RGB signal)  
 Pin #6 & #7, 7 pin 'D' connector NO CONNECTION  
 Pin #8, 7 pin 'D' connector to pin #3, IC-1 (Positive Horizontal sync output)  
 Pin #9, 7 pin 'D' connector to pin #8, 8 pin DIN connector if required (Vertical sync)  
 Pin #1 & 2, IC-1 to pin #4, 7 pin 'D' connector (Negative Horizontal sync)  
 Pin #3, IC-1, to pin #8, 7 pin 'D' connector (Positive Horizontal sync out)  
 Pin #7, IC-1 (two wires), to pin #1 & 2, 7 pin 'D' connector and to pin #2, 9 pin DIN connector  
 Pin #14, IC-1, to pin #3, 8 pin DIN connector (Pin #3 is labeled PA in the GL manual, however, the GS GL's have a 5 volt DC connection at this pin).

#### List of part# Radio Shack part numbers indicated

274-824	8 pin male DIN plug	\$1.79
274-1537	7 pin male 'D' plug	\$8.99
274-1539	7 pin 'D' Hood	\$8.79
274-1591	7400 Quad 2-input NAND gate	\$8.89
274-1882	7404 Hex Inverter	\$8.79 *
276-271	7 conductor, double shielded cable	\$8.10 per foot

\* Use the 7404 Hex Inverter as an alternate IC.

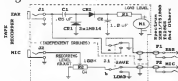
#### Additional Information:

As RGB monitor will display 8 primary colors: black, red, yellow, cyan, green, blue, magenta and white. If you purchase a CGA monitor, yellow will appear brown and white will be tinted blue or dirty looking. This is set-up in the GR's (wide of the picture tube) to produce these differences in color because CGA monitors have one additional line called Intensity. CGA will provide 16 colors if the Intensity line is used - IBM only! Yellow will be yellow when intensified and white will be white. You may also find that when you power-up the GL, the tested memory check display and the P1 - P2 display will roll until you press either function key: then it will stabilize. Try not using the vertical sync line, it may eliminate this problem.

NOTE: If you require any assistance, contact me through LIST.

Bob Elder.....

LISTings  
 NEWSLETTER  
 March 1991

**Figure 1: LOAD/SAVE Monitor**

Notes: 1. For best results, select R1 to obtain a full scale reading of about 8 VDC. R1 should be 850  $\Omega$  or 1K or less.

by William Pedersen

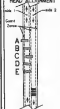
One problem is the feedback generated by most cassette recorders. So you have to pull one of the EAR plugs when SAVING.

A second is feeding the cassette recorder too strong a signal. For the ZX81/TS1000 this is seldom a problem, its signal is weak. The TS2068 puts out a relatively ear-splitting signal.

A third is getting the right amount of signal to the computer for successful LOAD. The ZX81/TS1000 is very finicky. It is so obstinate that a commercial tape will seldom LOAD with setting the user found to be optimum.

A TS2068 needs about 6 V P-P for best results, though this range is quite wide. The level for the ZX81/TS1000 is near 1 V P-P.

The first problem is solved by using a switch instead of pulling an EAR connection. Other things can be done, like grounding out stray signals.

**Figure 2 HEAD ALIGNMENT**

The second problem is solved by potentiometer P2 which allows you to control the signal strength heard by the recorder.

The third problem is solved by a Peak-to-Peak voltmeter for the EAR signal so you can see what you are getting before attempting to LOAD. Sometimes you can even adjust the level on the fly to salvage a cassette that fades out.

Unless you really have horrible tapes, this will solve your problem. Of course you might have an equally horrible recorder. In that case, this monitor comes in handy for finding out what kind of output you are getting.

There has been a lot said about head alignment being the major cause. Oscilloscope picture Fig. 2 shows that unlikely. The effect of head misalignment is not severe; it rounds off the corners and reduces signal strength. In severe cases like (C, D, E) more than one magnetized strip is seen by the head. Luckily, this is almost never the case.

Signal conditioners like WINSKY Board are best used to salvage tapes made on bad recorders.



## FROM THE CHAIRMAN'S DISK

Sometimes I am like a computer - I sit here with a blank mind and I have a column to write. But sitting at the left upper corner of my T/8 2068 is a joystick that I bought for \$2.00 at the Ft. Wayne HamFest and ComputerFest on November 13th. The joystick is a WICO COMMAND CONTROL, which was offered by a table with a lot of Commodore stuff. It works very well and the stick looks like it saw little wear.

They were dealing very well, in fact if you weren't really wanting to buy you should not make an offer when asked to since they just might accept a ridiculous offer. For instance I saw two quite dirty half height 5.25 disk drives with a tag that read \$5.00 each. Out of curiosity I lifted them up to see what make and model and they were Tandon TM 100-2A and the seller said they were a bargain. "Very dirty and overpriced," I said. "Make an offer" and I offered \$1.00 for both of them. So my "lost bag" got heaven. Not a total loss since they both worked as is but not without some bell ringing on my Ologi disk system. I wrapped them in newspapers and stored them with other disk drives I have. I wanted to keep the other disk drives clean. One other good buy and at my price was a book, "The Steady Guide To Microcomputer Troubleshooting & Maintenance" by Henry F. Beechhold for \$2.00. It gave me lots of ideas on how to clean a dirty drive.

My very first buy was a full height single drive case with a Radio Shack disk drive in it. Very compact case and very clean. The case even had an extender for the ribbon cable which meant that I did not have to open the

case to plug in the ribbon cable to test the drive. And as I knew it would be, it was a single sided 40 track drive, a TEXAS Instruments drive. Worked very nicely with no changes to the drive select socket. But it is single sided. I bought the case with the idea of having a pair of half height 40 track drives put in it. A school was selling all their Radio Shack equipment since they have upgraded to a MSD-OS clone.

I did buy what was supposed to be 40 track 360K half height drives but turned out to be 720K 80 track drives when I tested them at home. They were marked 360K drives and in another stack was a sign 720K.

and I wonder if the signs got mixed. He wanted three times as much for the 720K drives. I will have to watch for another chance to buy a 360K drive or two that is half height. What I got is a pair of TEAC 550PR-45-47 drives. I am after a set of drives that is easier to transport to meetings.

The computer column in Popular Electronics (January 1984 issue) was musing about the fact that the computer industry does not have a full complement of engineers. What they need is a DOCUMENT ENGINEER to write the manuals so that they make sense and are well

written. He suggested that a DOCUMENT ENGINEER should have a Masters in English and at least a Masters in computer programming. So that would require a DOCUMENT ENGINEER to have at least a Doctor's degree. And here I am trying to write a document to explain how to use a rather simple program and I am not a programmer!

# GO-PHER IT!!



Here I am trying to swim and I can not even float yet!

If anyone is using SPDCS (RAMEX Millennia K) there is one oddity that will make you think that the computer and SPDCS has locked up. In both the Larkem and the Oligor disk systems the interfaces try to LOAD or SAVE 5 or 6 times before reporting an error. But SPDCS makes 50 tries. So if it goes off with a blank screen and the disk drive is running that is what is happening. Amazing what one can learn if you read and reread the manual.

Yesterday, November 24th, I took another look at the full height drive and case I bought at the HamPost and saw that since the cable connector was extended to outside the case that I could easily use the case without the process of making slots as if for the ribbon cable to add a third drive to the 3.5 and 5.25 720K drives in another case. I remembered my prior try with a 3.5 drive and that nothing worked when it was on line so I thought that it was worth a try since this was a different type of 3.5 drive. I had to swap the 88DD drive with a DSDD drive and then add a connector to the ribbon cable on the 720K case. I made the DSDD drive (a TANDON Td1 100-2A drive) drive #2 although it is the first on the line of the ones on the cable. Also since the other drives had no place for a terminator resistor I tried it with out one. I had success with the setup. So now I have three drives in two cases to represent a 3.5 720K and 5.25 both 360K and 720K drives. I was even dreaming of a 3 inch drive but I did not see any place to get data so that is out. But does anyone even use the 3 inch drives?

I have used the Oligor disk interface so much and even when using the Larkem interface it does the same disk drive light on the selected drive that it does on the Oligor interface alone. Now what I am writing about is the LED on the front of every drive. On the Larkem interface it only comes on when the drive is to use but on the Oligor it is on all the time on whatever drive is the selected drive. Why the comment? Well, I was recently act-

ing up a set of three drives for my traveling computer and it has a pure Larkem interface. I was testing them and punched until I realized that on the Larkem the selected drive's light does not light up till it is in use. I thought that the system was down. I had gotten so used to looking at the drives to see which was selected that I forgot about the way that the Larkem handles the drive light. On the Oligor even in the Larkem mode the drive light is on all the time.

This week (today is 12.03.1993) I received more information on how Richard Jelen is converting his T/S 2068 into a portable using nicad batteries to power it and a 12 volt TV. I will include the material in the next issue of ZXin QLive Adveit since I will have to type in the hand written material and get the sketches and drawings included. He did cut the current draw using some CMOS chips. One other project Mr. Jelen is involved in is building up a disk interface from bare boards he ordered from John Oligor. See the cassette LOAD AID circuit schematic that is in this issue for some of his earlier work.

---

## MSDOS to Larkem and MSCRIPT.

Letter from Lee Cottrell, Cocoa, FL.

I have done that several times using two different schemes. The last time I took a file done on a MAC in MSWord, moved it across a network SAVED as an ASCII file to an IBM and then to Larkem. To make it easy to find I use a disk with only the files I want to convert.

I Using the Larkem Disk Editor I searched using the "Edit a block" function until I find the beginning of the text I want. I write down the address and look for the end of the text on that block and write that down. Also look for any ASCII codes that won't be in MSCRIPT such as 9 for tab. (MSCRIPT tab stops are "padded" with spaces - 32's.) Then I break out of the Editor and do a code

save such as "text.CT" CODE (start), (length). You may find more than one place with MSDOS text on a Larkon block so I save the next as "text.LCT CODE (start), (length)". This process is repeated until all the text is located and SAVED over to Larkon files.

2. Then I load MSCRIPT and load "text.CT". If you then look at a file with tabs in it will have short lines where tabs were. I then break out of MSCRIPT and add a few lines of basic to correct this such as,

```
1000 FOR I=46927 to
(46927+length of file)IF PEEK I=9 THEN
POKE I,32
1010 NEXT I
```

Then GOTO 1040 will find the tabs and replace them with a single space. MSCRIPT doesn't have much room left for added basic so keep it short. The last line of basic in my version of MSCRIPT is 936 so 1000 was a safe starting point. 46927 is where the CT files start and of course 32 is a space. You could also delete the unknown codes using "delete left" or "delete" keys if you only had a few problems. After I finish this I always delete lines 1000 and 1010 just in case.

3. Next I run MSCRIPT and add spaces where needed to get the tabs lined up. Some other cleanup such as added carriage returns might also be required. File is SAVED with a new name from MSCRIPT.

4. Steps 2 and 3 are repeated until all the files are cleaned up.

5. Now I would load "name1" and assuming that it was only part of what I had in MSDOS I would merge "name2" and so on until I had the file recreated in MSCRIPT. This is SAVED again as "final1".

The last file that I converted was the Larkon DOS cartridge disassembly that was done in 2 columns as I had quite a bit of cleanup, but I ended up with the same thing in MSCRIPT that I had started out with in MSWord on the MAC.

The other method is to use a utility called MSDOS fix written by George Chambers of the Toronto Users Club and published on page 8 of May '90 Sino-Link (George Chambers, 14 Richmond Court, Scarborough, Ontario, Canada M1K 2Y1). He has built the "unknown" code remover into his program. I used this program to convert the index of all Sino-Link articles from MSDOS disk to MSCRIPT and it worked quite well.

**Editor's comments:** I have used George Chambers' MSDOSfix for several times but I thought that Len's information would be helpful to someone with other than a Larkon interface. If someone gets this running on other than a Larkon disk interface please let me know or let Frank Davis of UPDATE MAGAZINE know because it might be handy for someone else to use. (UPDATE MAGAZINE, P. O. BOX 1095, Para IN 46970). Further information is available in the form of documents for MSDOS fix which I can supply. 

---

## D.U.S. DISK UTILITY SOFTWARE

By Donald S. Lambert

Comments about one of the programs that I have used

If you have a single copy of D.U.S. do not ever remove the write protect sticker. Any dedicating to the programs should be done on a copy disk. Get the copy done first, copy by any means the program COPYILB1 and then dedicate that copy. When the program COPYILB1 is LOADED it will halt with a line or two of programming, and a warning of some kind. EDIT the line and between the quotes of the A3 enter the letter given that applies to your disk interface. Run the cursor over to get in between the quotes in LET A3=" ". Use only capitals and if you have a pure Larkon interface use an "L", if a Larkon on an AERCO interface use an "A", if a Larkon on a RAMEX interface use an "R" and if a Larkon on an Olog interface use an "O". It must be an upper



case letter. And then RUN 9999 and that will automatically (you must not write protect the disk till this is done) SAVE that to disk. This is what the program will display on the screen till it is dedicated:

```
9910:LET A$="". IF A$="" THEN
PRINT AT VAL "3",NOT PL,"THIS PRO-
GRAM MUST BE CUSTOMIZED"
BEEP VAL "23",NOT PL:BEEP VAL
"23",NOT PL:LIST VAL "9910":STOP
9920 PRINT #VAL "4":LOAD
"COPYILC"+ASCIDE:RUN VAL "3"
9999 RANDOMIZE USR VAL "100":
SAVE "COPYILB1" LINE VAL "9990"
```

Now run the program and it will ask you for the original drive number, then the number of copies to be made and finally the drive the copy will be made on. The drives must be the same number of tracks both 40 track or both 80 track (none of the disk is unmaterial) and both have the same number of sides or at least the target disk needs to have the same or more sides than the original. Now with a working COPYILB1 program you are ready to copy the master disk. COPYILB1 will copy the original disk exactly as it is on the disk, same number of sides, same disk info and same number of tracks plus the same head step rate. And it does it at the rate of 5 tracks at a time and then as it SAVES to the target disk it FORMATS the disk. And it will report if the disk has something wrong with it. If the copy work ends with a notice BAD DISK it is bad and try again. In either case (good disk - it doesn't say good but if a bad disk it does say BAD) you will be asked ANOTHER? if so press "Y" and it will have you set up for the next copying routine. As it copies it will tell you how many tracks and sides the disk has plus head speed.

When I send a disk to Bob Sweger I use COPYILB1 to make up the disk for me from a master disk I make back when. The reason for this is that Bob uses a single sided drive and only 40 tracks but he requires a head step rate of 30. COPYILB1 does all that so that I don't have to worry about getting all the current information on the disk and since

LogCall is on the disk that also is there ready to use.

When you use the full disk you will find that it will load by pressing ENTER and powering up the computer. The screen will clear and then the first display will be on the screen. If you wait a while then it will progress to the menu display, but if you hit enter when the first display is shown it will immediately go to the menu. The menu will not display all the programs, use the up and down arrow keys to get the other titles. Then enter the letter for the one that you want and that program will be LOADED into the computer. The letters that you ENTER will not change as the titles scroll up or down but the computer knows what you want.

I had a disk that the Olgier disk interface sat at about the tenth or twelfth track. Now I could FORMAT that with FORMAT B1 (Has to be customized) on the Larcen disk interface and that will report how many bad bytes. But still it can end up with a problem. So after Formatting with FORMAT B1 I used MAPOUT B1. MAPOUT B1 will go through a disk and map out the bad blocks so that you never need worry about a failed program from a block with a bad byte. I have added the screen displays for the various above programs.

This shows the result of Formatting with bad bytes.

```
FORMAT DISK
WRITTEN BY KRIS BOISVERT
1989 BYTE POWER
```

```
FORMATTING DISK IN DRIVE 0
2 SIDES, 43 TRACKS, 6 ms
```

```
FORMATTING COMPLETED...
254000 BYTES IN BAD BLOCKS
406000 BYTES AVAILABLE ON DISK
```

And this is the result of using MAPOUT.B1 with LogCall installed on the above disk

```
Disk Name : Lambert 11 27 1993
L B1 001 AUTOCART 000
```

LaKen UKDOS ©1986  
Track/Side 04/0002  
Total Files 002  
Free Blocks 075

And since the drive call-out on MAPOUT D3 lists the drives as 0-4 then apparently it will work with RAMENSK.

Conclusion: If you have the LaKen disk interface then this is a must have disk. The other must have is George Chambers' utility disk of TTSUC Library Disk #1 (also ZQA: FD Lib. Disk #9) What one disk won't do the other will very likely do. In addition there is provision on the D.U.S. disk to convert the means load program to your own use. And an important factor is that the D.U.S. disk is almost so user friendly so that the manual is not required for every program. D/D

Note: D.U.S. is a Public Domain disk. Page 2, § 4 of the manual reads: "D.U.S. is Public Domain, this means you may freely distribute it to any LaKen UKDOS user as long as no charge is made for the package other than the cost of the media and/or time. Also, you must distribute exact copies of the disk(s), no program should be altered in anyway without first consulting me. etc."

Kristen Blevett

How about it Don, can we add it to our P.Q. Library? Alasd

## TURBO SWITCH For The ZX-81

by Tony Welling, Vashon, WA

The whole idea of experimenting with a "TURBO Switch"

came from reading the book "EXPLORER'S GUIDE TO THE T/S 1000" by Mike Lord. On page 58(1) of this book under the heading "Keyboard Scanning" he tells how the system variable MARGIN may be changed from 33 to 31 by taking pin 22 of the ULA chip HIGH or LOW. This is supposed to be of use to the computer manufacturer to enable the T/S 1000 to be used in either the USA which uses 31 blank lines at the top and bottom of the screen, or in the UK, which uses 33 blank lines. The

book also states on page 52(2) under the heading "NMI Handler" that "When in the SLOW mode the ZX81 uses the time occupied by these blank lines to carry on with your program".

So I thought if I increased the number of lines on my T/S 1000, I might increase the speed of program execution. And it works well. I use direct video and have not tried it using the RF modulator, but if you use direct video I think you will have success from the modification.

To test the speed of program execution I use the following BASIC program:

```
10 FOR N = 1 TO 500  
20 NEXT N  
30 PRINT "FINISHED"
```

With pin 22 HIGH the computer takes

30 seconds. With the pin low, the program takes 28 seconds. (About a 28% increase in speed. Don). This is a considerable increase in speed. One might ask "Why have a TURBO Switch?" Well, when I use my WORD\* program (word processor) at the "TURBO" speed the cursor blinks at about twice the normal rate and does not seem to miss keys as it did in the past, and when playing games I use the slower speed so that I can get a higher score!

When using the higher speed I find the monitor screen is filled with lines from top to bottom, when using the slow speed I find a blank screen at the top and bottom 1/2 inch of the screen. I can switch from "TURBO" to normal at any time without any crashes.

Lastly, how is the modification carried out? You have to take the T/S 1000 circuit board out of its case and locate resistor R30 which is located between the ULA chip and the regulator heat sink. It should have the colors Brown Black Brown.

Using a soldering iron, lift the left hand end of the resistor clear from the circuit board hole. Also locate resistor R31 which is four resistors down from R30, and solder one end of some two core cable to the left hand end of R30, which should be a 5V rail. To the mixed left hand end of R30 solder



## (1)(Page 58) KEYBOARD SCANNING

This is a fairly straightforward sub-routine which is normally called from the Main Display routine, but which can equally well be used by your machine language programs.

It returns a code in the HL register pair corresponding to the key pressed, or FFFF if no key was pressed. It also loads the System Variable Margin (402H) with the correct number of blank lines needed at the top and bottom of the picture; 55 for U. K. machines, 51 for the U. S. A. models, by detecting whether pin 22 of IC1 is strapped to 0V or not.

## (2)(Page 52) NMI HANDLER

As each horizontal TV scan line is completed in 64 micro-seconds, it takes 34 X 8 X 64 micro-seconds - which is just over 12 milli-seconds - to output the complete 24 rows of characters displayed in each TV frame. But, to synchronise the TV set properly, each frame must last for 20 milli-seconds (16.7 milli-seconds for the U. S. A. models), so additional - blank lines are needed to fill in the top and bottom margins of the picture, before during and after the frame synchronisation pulse.

When in the SLOW mode, the ZX81 uses the time occupied by these blank lines to carry on with your program. But, to keep track of the time, it is interrupted by the SCL chip every 64 micro-seconds. The non-Maskable Interrupt is used for this function, and calls the routine starting at 0066 hex. 00H.

## USING A 16K MEMOTECH MEMOPAK THAT HAS SWITCHES

by Donald S. Lambert

This was in a letter that I wrote to Gilliam Parrish in regards to using a 16K MEMOTECH MEMOPAK.

At the Dayton ComputerFest I did find a 16K Memotech ram module of the latter manufacture with the DIP switches which are located where the oval opening in the back is. I really did not know that they made two versions but am not surprised. And,

I would expect that it could be possible to upgrade a switchless version to one with switches. How much circuitry would have to be changed is not known. But the switchless version will not work with more than 16K of memory.

But this is what the manual stated:

Now to set up the MEMOTECH 16K. Make sure your power supply is not connected to the ZX81 when you attach the pack. We recommend that the ZX81 + (this was written in the U. K. where they never had the TS 1600) MEMOPAK configuration should go in this order, according to what add-ons you have:

ZX81 + (Commercial Printer 16K) + (HRC) + Master Memopak 16K or ZX8 + (Sinclair Printer - Silver paper one) + (Slave Memopak or Sinclair 16K). (You will have to experiment to find out where to connect the TS 2040 printer.)

## WHAT ABOUT THE SWITCH SETTINGS?

There are two possible modes for using the Memopak 16K: MASTER and SLAVE. The mode you require depends on which of the possible memory configurations you are using. The configurations and modes are as follows:

- a) MEMOPAK 16K alone (MASTER)
- b) MEMOPAK 16K (MASTER) + MEMOPAK 16K (SLAVE)
- c) MEMOPAK 16K (MASTER) + SINCLAIR 16K (SLAVE)
- d) MEMOPAK 32K (MASTER) + MEMOPAK 16K (SLAVE).

Now, if your MEMOPAK 16K is being used as a MASTER (alone or with a SLAVE pack attached somewhere behind) then switches 2 and 3 should be ON and switches 1 and 4 should be OFF. On the other hand, if your MEMOPAK is sitting behind a MEMOPAK 32K or another 16K then it should be switched into SLAVE mode (1 and 4 ON and 2 and 3 OFF).

## REMEMBER "ON" IS UP

WHAT SHOULD I DO TO USE THE NEW, LARGER MEMORY?

If you have a total of 32K RAM then to make the most of it you'll need to key in  
POKE 16389,192

NEW

To raise the RAMTOP. For the 48K RAM, you should key in  
POKE 16388,255

POKE 16389,255

NEW

To check RAMTOP, type in

PRINT PEEK 16389

NEW

and you will get back the current RAMTOP. This should be 192 for 32K of memory. If I remember right 2K should get 72,

16K should get 128. 32K should get 192. Remember that the default is to 16K (128).

With 32K of memory you will have to watch that the display file does not straddle the 32K mark (ROM is 0K, 8K is set aside for use of some accessories) which is where the RAM starts at 16384 (16K times 1024). And that means that 16K of RAM has a RAM top of 32768. So you need to fix the computer and jump the program above the 32768 mark and later that can be edited out of the program.

If you wanted to convert your old style 16K MEMOPAK to the new style Don Elliott probably could do it. But on the other hand it might be cheaper to go to a new MEMOPAK or a static RAM memory 640

## UNCLASSIFIED ADS

### SPECTRUM for your 2068

If you are a LarKen LX-DOS owner and would like to run SPECTRUM programs on your system, we will supply a V2 EPROM, socket and 74HCT32 for \$12 which includes shipping and handling. The installation instructions are in your LarKen manual. We shall not be responsible for your install job. AIRCO owners need only the EPROM for \$10 forwarded to LarKen.

Bob Swager Address on page 2

### 747 Flight Simulator

So you like to fly, the 747 Flight Simulator for SPECTRUM by Derek Ashton of DACC sold over 48K copies in Europe. Requires a SPECTRUM equipped 2068. At this time supplied on LarKen 338D disk only for \$10 which goes to Derek now working at Motorola with Bob.

Bob Swager Address on page 2

### PAL Chips

Programmable Array Logic chips are available for some Times or QL's from NAP\_Ware.

Nate Pashtron

940 Beau Dr. Apt. 204

Des Plaines IL 60016-5876

Phone(jev) 708 439-1479

### Update! Magazine

Our Only Magazine

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317 473-8031

### CONQUEST

*A Strategic Generic War Game for the 2068*

*TIME: A few centuries from now*

*PLACE: An unknown inhabited planet.*

*YOU: Commander of Expeditionary Force.*

*MISSION: Capture and planet.*

*INTELLIGENCE: Heavy seen scouting some planet*

*STRATEGY: Find and capture Planet's cities*

*Direct production to aid your war effort.*

*Defeat enemy when found.*

*SITUATION: You have just captured your first city*

☒ Can generate new random map every time or play map of your choice.

☒ For 2 or 3 combatants. Play against the computer or your friends.

☒ Production forces and fighting ability adjustable for each player - keeps game a challenge at all times.

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Available on tape, or disk, AEROC. Oliver Game and map SAME as BASIC to allow adaptation to your system. Price \$19.95 + \$2.95 S&H.

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Indiana residents, please add 7% sales tax.

## LISTing Newsletter.

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**WANTED: Articles or material for the QL and the Z88 for publication in ZXr QLive Alive!** Also articles on any other TS computer. Can't publish what we do not have. Will accept even hand-written notes.

DONALD S. LAMBERT

1301 KIRKLINGER PLACE

AUBURN IN 46706-3010

**FREEBIE:** Take a look where your disk drive interface cable comes out of the disk case. If you have a sharp piece of metal (all my metal cases had) and want to protect your interface cable from wear here is a deal. I have some plastic protectors that are 3.5 inches long (39 of them) and some that are 2.75 inches long. They are easy to cut to length if necessary (prime all wires) and the protector are such that they will slide onto a piece of metal or plastic that is up to about .050 inches thick. To get one or to send a stamped self addressed letter and I will send you up to 3 per request. These were given to me by Paul Holmgren to be passed on. DONALD S. LAMBERT, 1301 KIRKLINGER PLACE, AUBURN IN 46706

FRANK DAVIS

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